IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of
J.P. CANO et al,
Serial No. 08682,602
Filed: December 16, 1996

Group Art Unit 1773
Examiner : Nakarani D.

For: OPTHALMIC LENS MADE OF ORGANIC GLASS WITH SHOCK PROOF INTERMEDIATE LAYER, AND METHOD FOR MAKING SAME

DECLARATION PURSUANT TO 37 CFR 1.132

I, Philippe ROISIN, declare:

That I am a French citizen residing at, ...LES ULIS - FRANCE...

That I have been awarded:

a Master of Science, University of Kent at Canterbury (physics-Chemistry (1990/1991),

DESS IMPCA (Instrumentation and methods in physico-chemical analysis) Faculté d'Orsay Université Paris II (1991/1992).

That I am currently employed as engineer of the R and D Department, materials, thin layer group of ESSILOR INTERNATIONAL (COMPAGNIE GENERALE D'OPTIQUE) where I have been employed since 1994, and I am more particularly in charge of studies on optical characterization and anti-reflective optical treatments.

That I have read and am familiar with the United States patent application SN 08/682,602 filed on December 16, 1996 for: OPTHALMIC LENS MADE OF ORGANIC GLASS WITH SHOCK PROOF INTERMEDIATE LAYER, AND METHOD FOR MAKING SAME.

That I have read and am familiar with the prior art references cited by the Examiner and more particularly US-4,904,525 (TANIGUCHI et al).

1/ Tests

That I have modelized the stackings shown in annex 1 using commercial software "Film Star Design" of FTG Software Associates-Princetown New Jersey.

This modelization software is commonly used since many years.

Calculations were made using a light beam having an incident angle of 15°.

The modelized stackings were the following:

Stacking 1: corresponds to a reference stacking comprising a substrate and a hard coat according to example 1 of Taniguchi et al but without the anti-reflective coating.

Stacking 2: corresponds to the stacking of example 1 of Taniguchi et al and comprises: substrate / hard coat / top film (anti-reflective film).

This stacking is said to have an experimental transmission of 96.1%.

Stacking 3: comprises substrate / hard coat / top coat of fluorosilicone (anti-reflective coating) / second fluorine containing organopolysiloxane based film (antistatic coating). Three thicknesses of the antistatic film were considered, namely 1(a), 15(b) and 30(c) nm.

Stacking 4: comprises substrate / hard coat / second fluorine containing organopolysiloxane-based film (antistatic film). Three thicknesses of second fluorosilicone film were considered, namely 1nm (a), 15nm (b) and 30nm (c).

Refractive index value of the second fluorosilicone film was estimated from F/Si ratio of 0.04/1.

2/ Results:

For each stacking, mean reflexion values R_m (per face) (for the entire visible spectrum 400-700nm) and mean transmission value T_m were determined assuming that the two major faces of the substrate were coated with the corresponding layers.

	1	2	3			4			S
			a	b	c	a	b	c	
R_m (%)	5.06	1.30	1.31	1.63	2.28	5.06	4.85	4.24	5.47
T_m (%)	89.87	97.40	97.38	96.74	95.43	89.87	90.30	91.52	89.06

S corresponds to an uncoated substrate.

For the skilled person, a coating which does not lower the reflexion value (per face) to at least 2.5% is not considered as an antireflective coating. This 2.5% value is the limit typically considered by the skilled persons as characterizing an anti-reflective coating.

This value is the value that has been selected for defining an anti-reflective coating in the International standard ISO/DIS 8980-4 which is presently under discussion for approval.

3/ Conclusion

In view of the above results, it appears:

• second fluorosilicone film (antistatic coating) cannot be considered as an antireflecting coating since all stackings 4) including only the hard coat and the second fluorosilicone film have R_m values per face (namely at least 4%) much higher than 2.5% which is the upper limit value for considering the coating as having antireflective properties. Furthermore, stacking 3 shows that the presence of the second

fluorosilicone film (antistatic) deteriorates the antireflective properties of the underneath antireflective top coating.

The fact that for stacking 2 (example 1 of the reference) the claculated value of T_m (97.4%) is higher than the experimental value (96.1%) given in the reference shall not be surprising. In fact, there always exists slight variations since the actual stacking is ususally not perfect contrary to modelized stackings. Further, modelized calculations were effected using an incident angle of 15° and integrating over the full 400-700nm range. In the reference, other conditions may have been used.

Nevertheless, the above stacking modelization gives a meaningful comparison of the properties of the different stackings.

The antistatic second fluorosilicone film of the reference is not an antireflective coating. In the reference, the antireflective properties are attributable to the first fluorosilicone top coat.

I further declare that all statements made herein of my own knowledge are true and that all statements on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful statements may jeopardize the validity of the application or any patent issuing thereon.

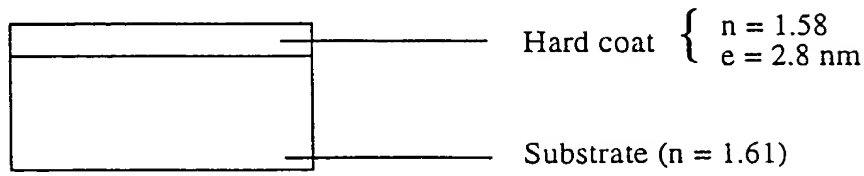
January 19, 1999

DATE

SIGNATURE

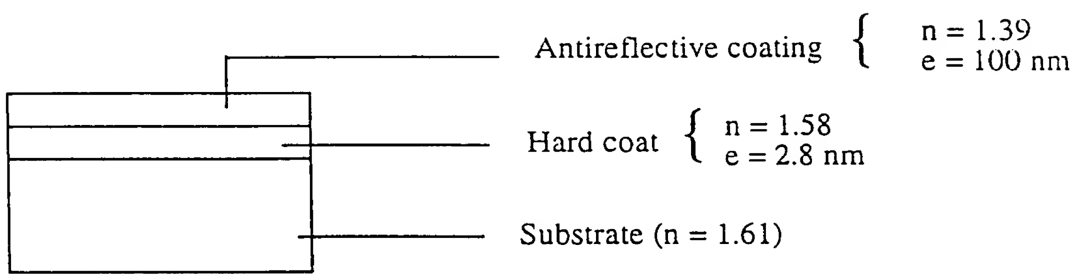
ANNEX 1

STACKING 1

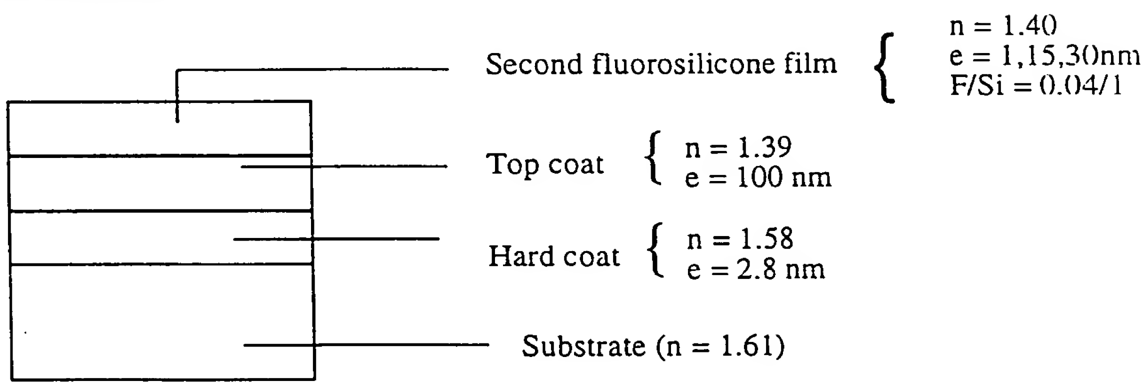


STACKING 2

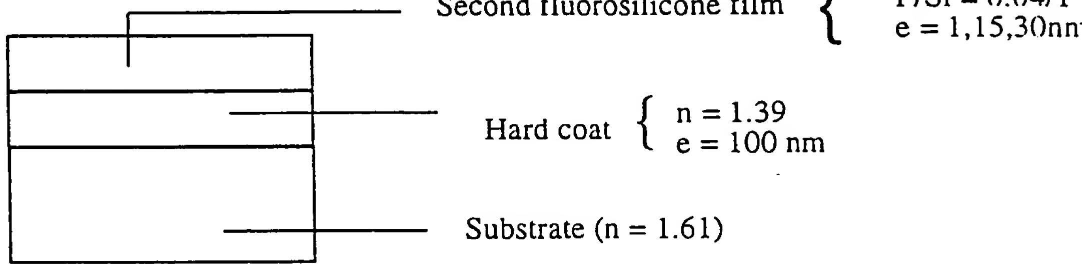
(Example 1 of Taniguchi et al)



STACKING 3



STACKING 4



e = thickness of layer